

SHORT COMMUNICATION

Life goes on: *Oblada melanura* (Linnaeus, 1758) (Perciformes, Sparidae), the saddled seabream, expands its distribution range westwards to the Azores

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A group of 10 individuals of the saddled seabream, *Oblada melanura* (Linnaeus, 1758), was photographed at Lajes do Pico Bay, on Pico Island, Azores. This finding represents a significant westward expansion of the known range of this species and may be linked to global warming. A call is therefore made for a monitoring program of the coastal fish fauna of the Azores which would improve the understanding of the effects of climate change and other anthropogenic stressors on marine communities.

Key words: *Oblada melanura*, new record, Azores

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On August 9th 2020 a school of 10 silver-grey fish, less than 20 cm in total length and with a conspicuous black spot surrounded by a white ring on the caudal peduncle, was observed inside Lajes do Pico bay (Pico Island, Azores, Portugal, approximately 38°23'55.8"N 28°15'21.2"W) (Fig. 1). The group was observed while the authors were snorkeling over a rocky bottom covered by a multispecific algal turf at about 2 m depth. The encounter lasted for several minutes which made it possible to take a number of pictures (Fig. 2) and make a short video.

Observation of the images suggested that the fish belong to the family Sparidae, with the following visible diagnostic features (Carpenter & Iwatsuki 2016): small size and fusiform body with a large head; silver-grey colouration with dark spots and lines; mouth small with the upper

jaw not extending backward beyond a vertical line through middle of eye; long, continuous dorsal fin; forked caudal fin; single, well developed and continuous lateral line extending backward to base of caudal fin; pelvic fin inserted just behind a vertical line through base of pectoral fin, which is long and pointed. However, Haemulidae, Lethrinidae and Lutjanidae are fish families similar to Sparidae (Parenti 2019), and they cannot be distinguished by using only the features visible on the images we captured. Therefore, all these four families were included in searching for a species match. The procedure consisted of browsing in FishBase (Froese & Pauli 2019) and several other publications (see Table 1) for species with a silver-grey colouration and a dark spot on the caudal peduncle. The results are presented on Table 1.

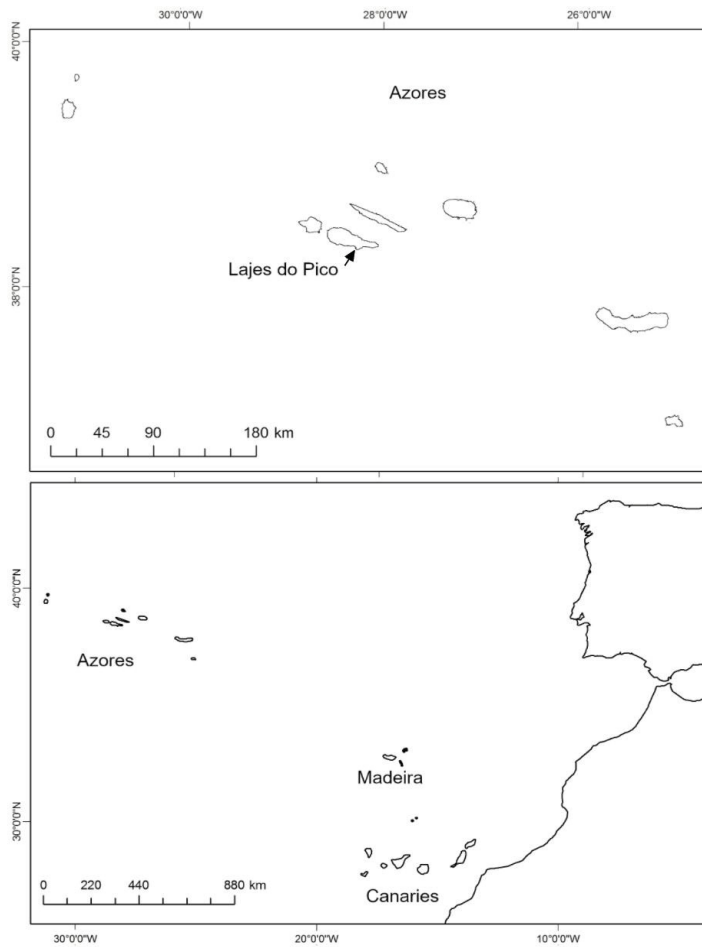


Fig. 1. Observation site on Pico Island (top); Azores (bottom).

We did not find any silver-grey species with a black spot on the caudal peduncle in the Lethrinidae and Lutjanidae families. In fact, no species of Lethrinidae has a black spot on the caudal peduncle, whereas the two Lutjanidae species which do have such a spot (one of them, the sailfin snapper *Symphoricthys spilurus*, even has a white ring surrounding it) are rather colourful fish, with conspicuous body ornamentations which were obviously not present in our individuals. Furthermore, the only three species belonging to the family Haemulidae which have a black spot lack a white ring surrounding it, and two of them have clear yellow longitudinal lines, not present on the observed individuals.

Therefore, the analysis shows that only the saddled seabream, *Oblada melanura*, belonging to the family Sparidae, has all the features visible in our images. In particular, the combination of a silver-grey general colouration with a white ring surrounding the large black spot on the caudal peduncle was found to be a diagnostic feature of this species among the families investigated.

The present record of *O. melanura* in the Azores represents a significant westward expansion of the species range. The species has a wide latitudinal distribution along the eastern Atlantic shores (from the Bay of Biscay, into the Mediterranean and southward to Angola), but it had not yet been recorded west of the Madeira Islands (Froese & Pauli 2019).

The continuous rise in anthropogenic greenhouse gas emissions is increasing global ocean temperatures (Pörtner et al. 2019). One of its effects is the tropicalization of temperate marine communities (Vergés et al. 2014), observable in the Northeastern Atlantic, from the UK coasts (Stebbing et al. 2002) down to the Iberian Peninsula (Encarnação et al. 2019), Madeira

(Schäfer et al. 2019) and the Canary Islands (Espino et al. 2019). The Azores coastal fish fauna is also undergoing a process of tropicalization, characterized by the growing number of records of species with tropical or subtropical affinities, which have their northernmost distribution limit on this archipelago. (Afonso et al. 2013).



Fig. 2. Part of the *Oblada melanura* school observed (top) with detail of one of the individuals (bottom).

However, the present record of *O. melanura* on these isolated islands does not fit this south to north tropicalization pattern because the species was already present at higher latitudes. Instead, it corresponds to a westward colonization process similar to that of several species with northeastern Atlantic and Mediterranean origin. Recent examples include new records of the rough-tail tingray *Bathytoshia lata*, the golden grey mullet *Liza aurata*, and the two-banded seabream *Diplodus vulgaris* (Afonso et al. 2013).

Nevertheless, there may also be a link between this east to west expansion and climate change, exemplified by the colonization of *D. vulgaris*. This species was first caught in the Azores in 1997 (Afonso et al. 2013). However, Steffani et al. (2015), based on results from Approximate Bayesian Computation, indicated that *D. vulgaris* could have inhabited the archipelago over a century ago, and that its demographic expansion after the 1990s may have been facilitated by changing climatic conditions.

Table 1. Features of the observed specimens compared with world-wide species of Sparidae and similar families with silver-grey coloration and a black spot on the caudal peduncle, based on Fisher & Bianchi 1984 ⁽¹⁾; Randall 1996 ⁽²⁾; Carpenter 2002 ⁽³⁾; Jiménez Prado & Béarez 2004 ⁽⁴⁾; Carpenter & Iwatsuki 2016 ⁽⁵⁾ and Froese & Pauli 2019 ⁽⁶⁾.

Species	Features				Distribution
Observed specimens	Caudal peduncle with a black spot surrounded by a white ring	Body oblong/ elongated, slightly ventrally compressed	Head profile straight	Faint dark longitudinal lines	Azores (this publication)
Sparidae					
<i>Diplodus annularis</i>	NO ⁽⁵⁾	NO ⁽⁵⁾	YES ⁽⁵⁾	NO ⁽⁵⁾	Eastern Atlantic: Canary Islands, from Portugal to the Bay of Biscay, Mediterranean. Black Sea and Sea of Azov. ⁽⁶⁾
<i>Diplodus capensis</i>	NO ⁽⁵⁾	NO ⁽⁵⁾	NO ⁽⁵⁾	NO ⁽⁵⁾	Southeastern Atlantic and Western Indian Ocean: Angola to Mozambique and southern Madagascar. ⁽⁶⁾
<i>Diplodus holbrookii</i>	NO ⁽³⁾	NO ⁽³⁾	YES ⁽³⁾	NO ⁽³⁾	Western Atlantic: Chesapeake Bay to Florida and northeastern Gulf of Mexico. ⁽⁶⁾
<i>Diplodus kotschyi</i>	NO ⁽¹⁾	NO ⁽¹⁾	YES ⁽¹⁾	YES ⁽¹⁾	Western Indian Ocean: Persian Gulf and Oman to India. ⁽⁶⁾
<i>Diplodus noct</i>	NO ⁽¹⁾	YES ⁽¹⁾	YES ⁽¹⁾	YES ⁽¹⁾	Red Sea. ⁽⁶⁾
<i>Diplodus sargus</i>	NO ⁽⁵⁾	NO ⁽⁵⁾	NO ⁽⁵⁾	NO ⁽⁵⁾	West African coast, from Senegal to the Straits of Gibraltar; Madeira and Canary Islands; Bay of Biscay. ⁽⁶⁾
<i>Oblada melanura</i>	YES ⁽⁵⁾	YES ⁽⁵⁾	YES ⁽⁵⁾	YES ⁽⁵⁾	Eastern Atlantic: Bay of Biscay, Mediterranean, and from the Strait of Gibraltar to Angola; Madeira, Cabe Verde Islands, and Canary Islands. ⁽⁶⁾
<i>Spicara melanurus</i>	NO ⁽⁵⁾	YES ⁽⁵⁾	NO ⁽⁵⁾	NO ⁽⁵⁾	Eastern Atlantic: Cabe Verde Islands and Senegal. ⁽⁶⁾
Haemulidae					
<i>Haemulon aurolineatum</i>	NO ⁽³⁾	YES ⁽³⁾	NO ⁽³⁾	NO ⁽³⁾	From Chesapeake B; and Bermuda through tl Gulf of Mexico to Braz ⁽⁶⁾
<i>Haemulon</i>	NO ⁽⁴⁾	YES ⁽⁴⁾	YES ⁽⁴⁾	YES ⁽⁴⁾	Eastern Pacific: Baja California,

Species	Features				Distribution
<i>maculicauda</i>					Mexico to Colombia ⁽⁶⁾
<i>Haemulon steindachneri</i>	NO ^(2,4)	YES ^(2,4)	YES ^(2,4)	NO ^(2,4)	Western Atlantic: Panama to Santa Catarina, Brazil. Eastern Pacific: Mexico to Peru ⁽⁶⁾

Given the current context of a climate emergency (Ripple et al. 2017), the MoniCO program to monitor coastal resources and habitats in the Azores (Afonso 2020) is particularly welcome. Considering Azores as a key point for the study of Atlantic biogeography (see the recent analysis by Freitas et al. 2019), a long term monitoring program would have more than local relevance; it would contribute (as emphasized, e.g., by Sandström et al. 2005) more detailed data to understand the effects on marine communities of climate change and other anthropogenic stressors.

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